

# INTRODUCTION TO INJURY PREVENTION

TAKEN FROM USACHPPM RESEARCH



# WHY SHOULD WE CARE ABOUT INJURY PREVENTION?



**#1**

UNDISPUTEDLY THE LEADING  
HEALTH AND READINESS THREAT  
TO THE ARMY AND SISTER  
SERVICES.

# SPORTS INJURIES-IS IT WORTH THE RISK?

"Upon the fields of friendly strife are sown the seeds, that upon other fields, on other days, will bear the fruits of victory."

General Douglas MacArthur



YES! BUT...

*Sports in the Military*

***>50,000 sports injuries require medical care annually.***

***Sports: one of top four cause of injury-related hospitalizations***



# SPORT INJURIES

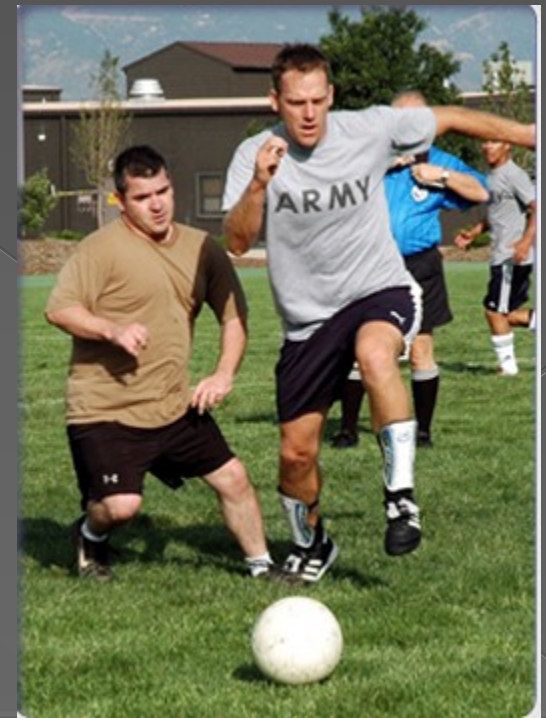
## *What are sports risks?*

- Not playing by the rules
- Not using proper equipment



## *Who is at risk?*

- Those not in shape
- Those with a prior injury



## *How can we reduce the risk in jury?*

- Warm up
- Use principles of exercise
- Don't try to play above your ability level
- Use proper equipment including sport-specific shoes



### ***Sports requiring mouth guard:***

***Basketball***

***Flag Football***

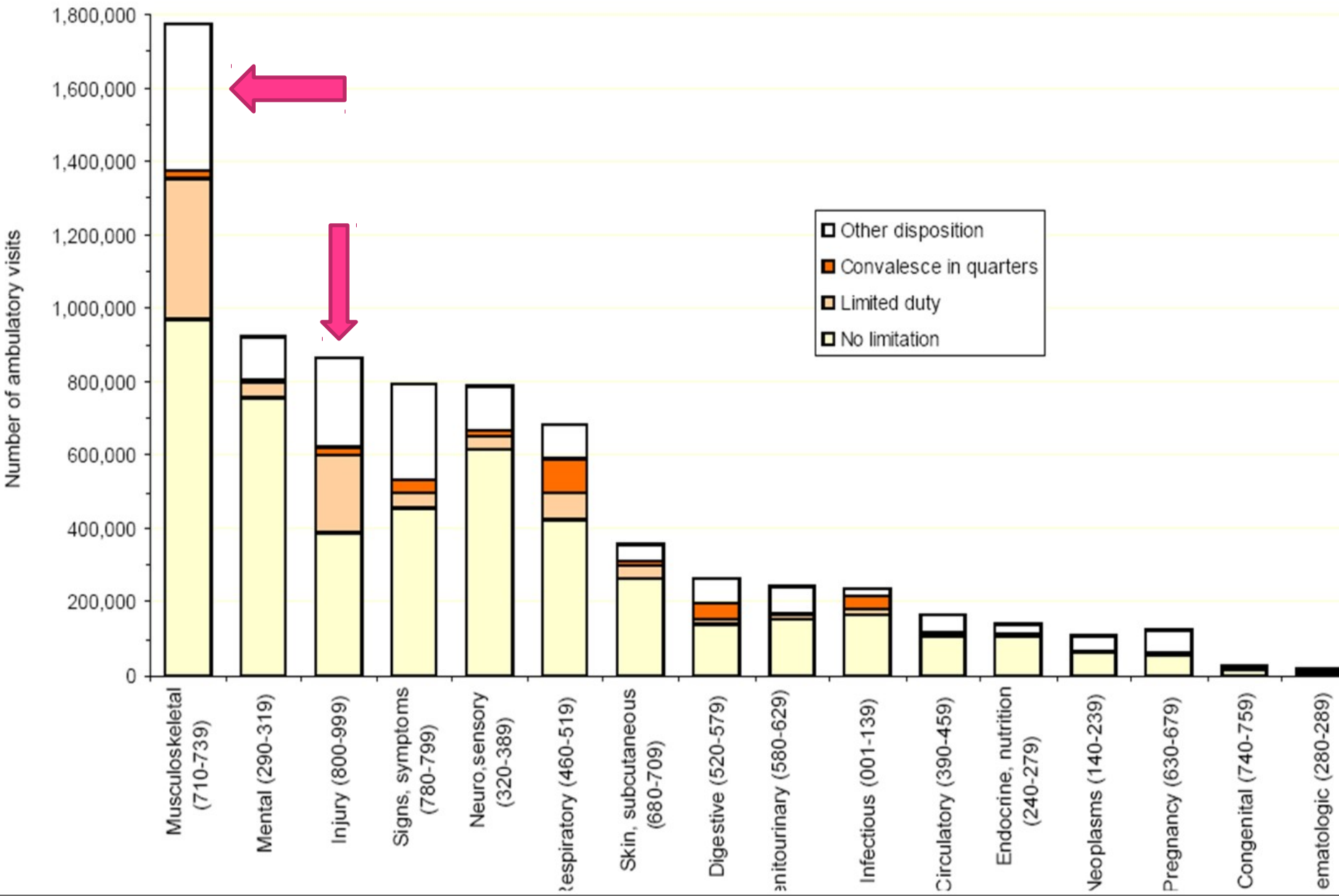
***Softball***

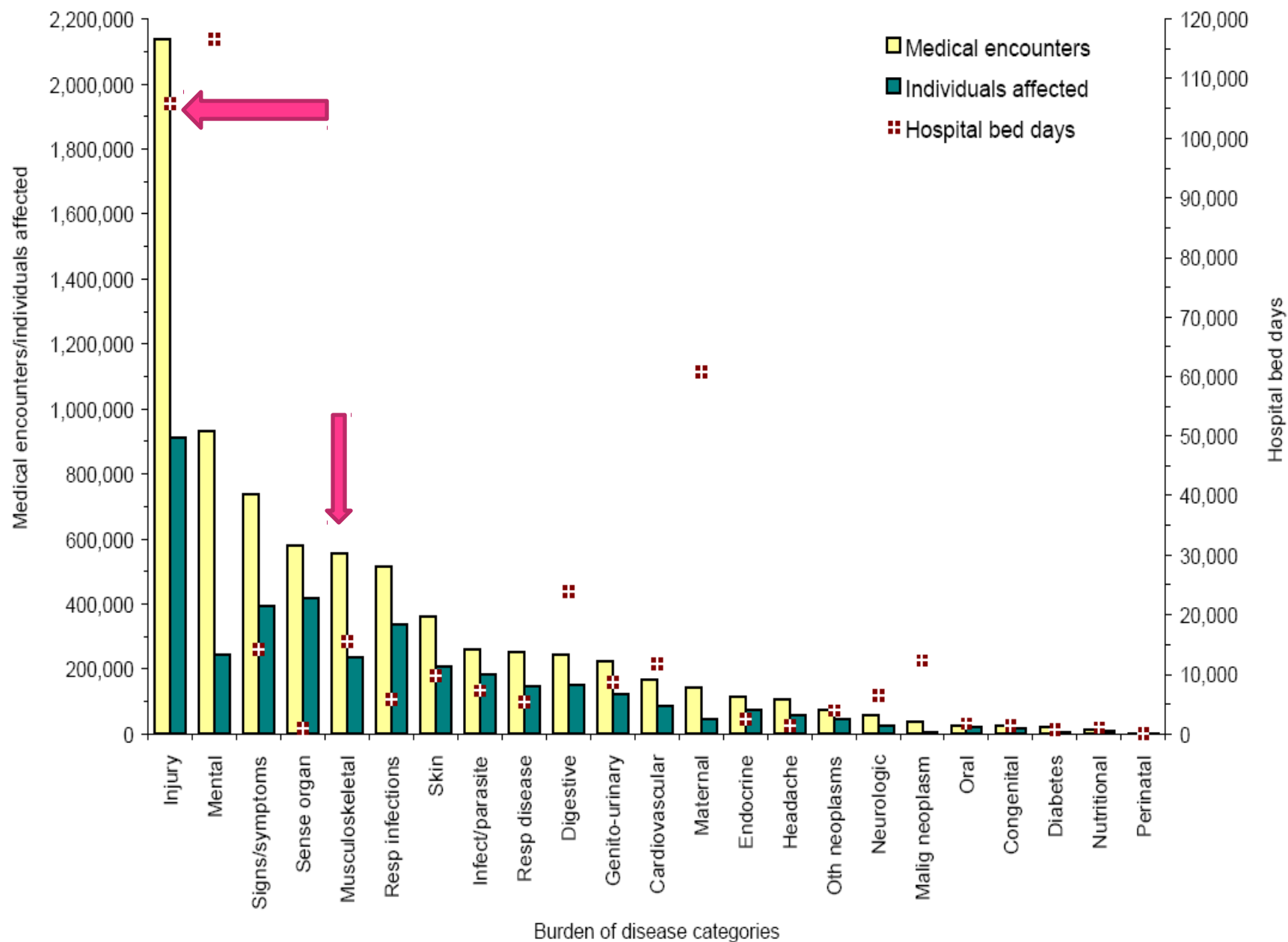
***Snowskiing/Snowboarding***

***Cycling***



**Figure 3.** Ambulatory visits in relation to reported dispositions, by diagnostic category, active components, U.S. Armed Forces, 2007



**Figure 1.** Medical encounters, individuals affected, and hospital bed days, by burden of disease categories, U.S. Armed Forces, 2007



# INJURY PROBLEM

- 2.1 Million medical encounters affecting 900,000 service members.
- 6 of the top 10 diagnoses across the military are musculoskeletal related.
  - Low back, knee, ankle/foot, shoulder and arm
  - Females Soldiers are injured at twice the rate of male Soldiers
- Army has an injury rate of 2.2 injuries per Soldier per year. Highest of the Services.

# STRAINS AND SPRAINS? WHAT'S THE BIG DEAL?

- 68% of all limited dispositions (profiles) are from musculoskeletal injury.
- 110,000 days in the hospital, second most for any condition.
- Estimated 25 million duty days lost.

# INJURY PROBLEM

## WAS IT ALWAYS LIKE THIS?

- Technical report written in 1996 entitled “Injuries in the Military: A Hidden Epidemic”
  - “Injuries have greater impact on the health and readiness of the U.S. Armed Forces than any other category of medical complaint during peacetime and combat.”
- The trend continues...

# INJURY-THE REASON

- There will always be an occupational related baseline rate of injury. That is unavoidable.
- According to recent data more than 50% of our injuries in the Army are a direct result of strenuous load and impact bearing exercise caused by physical training and sports related activities.
  - With the right prevention tactics we can probably reduce this by 25-50%

# INJURY-RISK FACTORS

- Low fitness level
- Physical inactivity
- Prior injury
- Females
- Tobacco use
- Age over 25

# WHAT EVIDENCE DO WE HAVE ABOUT INJURY PREVENTION?

- A DOD work group looked at all the scientific evidence and wrote a technical report in 2008.
- These interventions are supported by science:
  - › Overtraining
  - › Perform multi-axial and agility exercises
  - › Consume nutrients post-exercise
  - › Use mouthguards (combatives, raquetball, etc)
  - › Wear synthetic blend socks
  - › Use of semi-rigid ankle braces (soccer, basketball)



SO WHAT DO YOU THINK?

OF THOSE SIX PROVEN INJURY  
PREVENTION STRATEGIES WHICH  
DO YOU THINK WOULD HAVE AN  
IMMEDIATE EFFECT ON  
REDUCING OUR INJURY RATE?

OVERTRAINING!

MOST BANG FOR THE PREVENTION  
BUCK

WHAT PART OF OUR PT  
PROGRAM CAN WE IMPLICATE AS  
CAUSING MANY OF THE  
OVERTRAINING PROBLEMS AND  
OVERUSE INJURIES?

ENDURANCE RUNNING!

## Distance Running Poses Risks

Excessive distance running

Overtraining

Higher injury rates  
Lower physical performance  
Attrition

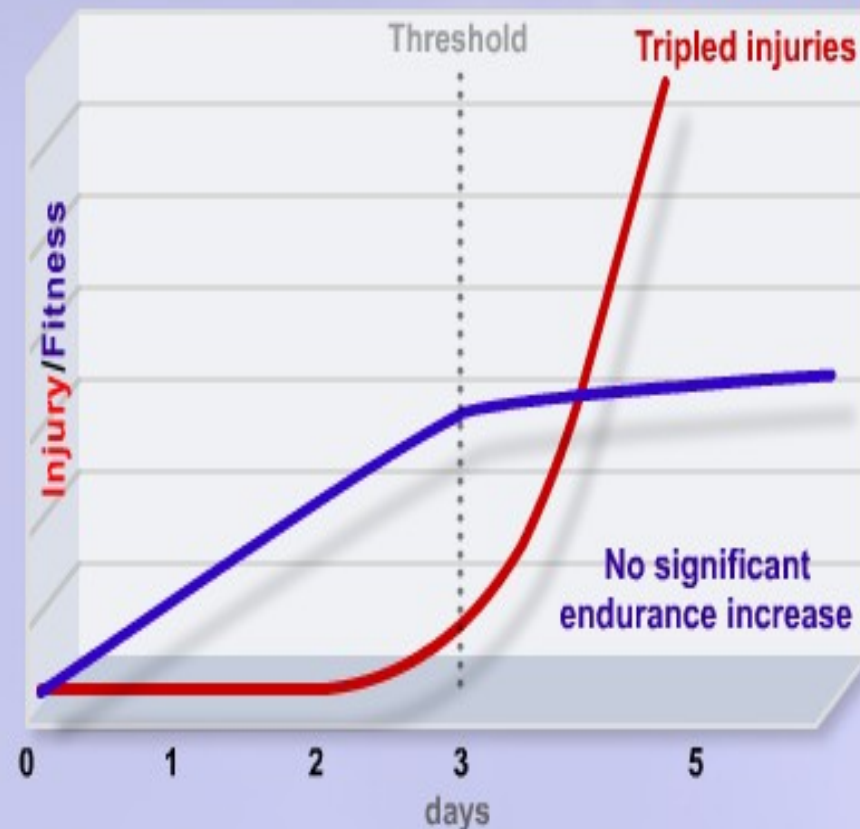
### Duration [Mileage/Time]

More mileage per week = greater chance for injury without a *proportional increase in physical fitness scores*

### Frequency [Times per Week]

Increasing frequency of running days per week = greater chance for injury with little or no increase in physical fitness scores

**We need a new approach to running.**



Excessive distance running

Overtraining

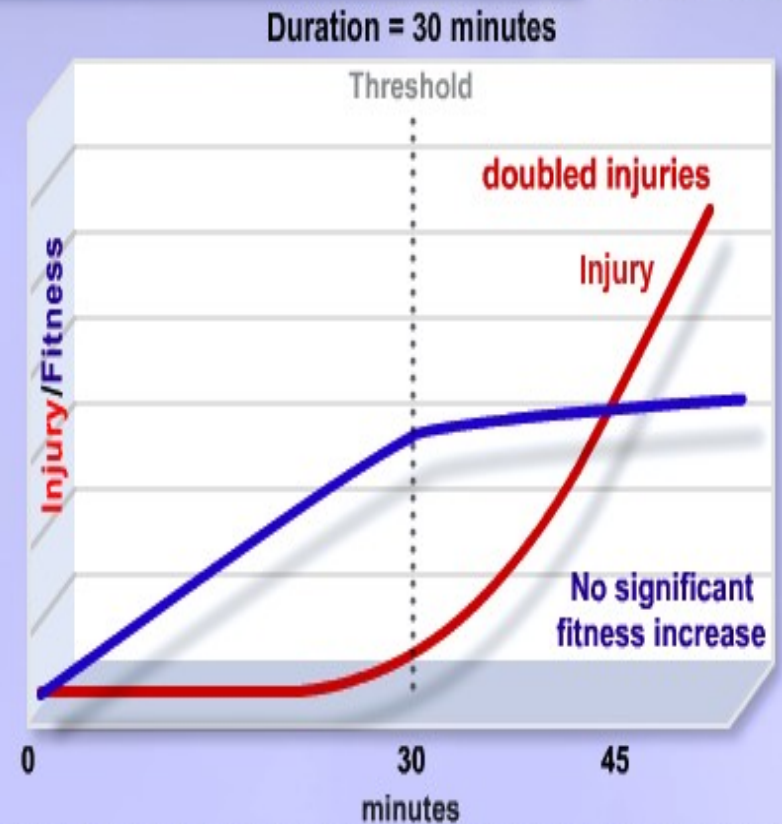
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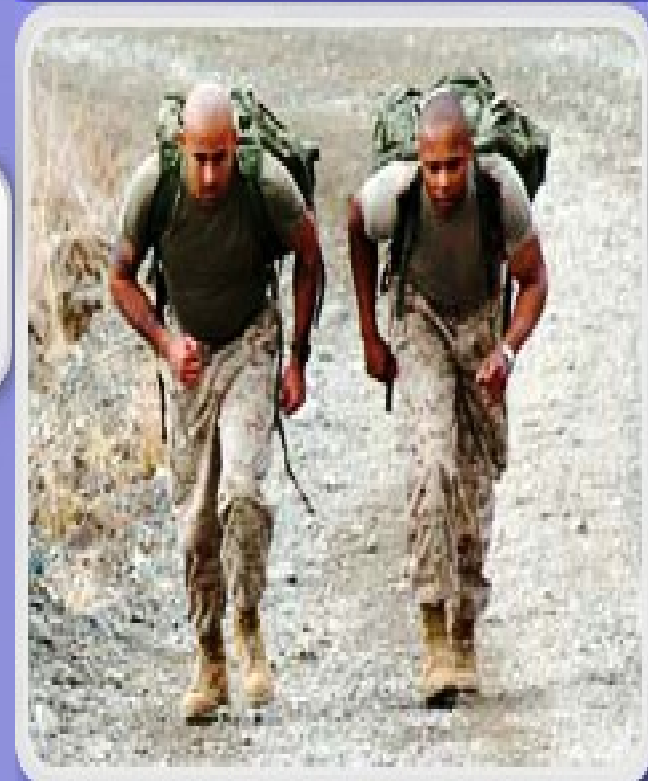
## Limit Duration (Mileage/Time)

- Balance training program: add agility and strength activities
- Substitute some runs with other endurance exercises: walking and marching
- Supplement with higher intensity runs for shorter distances (interval training)
- Limit run duration or distance



## Limit Frequency

Limit frequency of running activities



*reduce injury, maintain fitness  
improved pass rates*



## *Those Who Run Every Day Learning Activity*

Select the best explanation. Then select Done

### **What about people who run every day?**

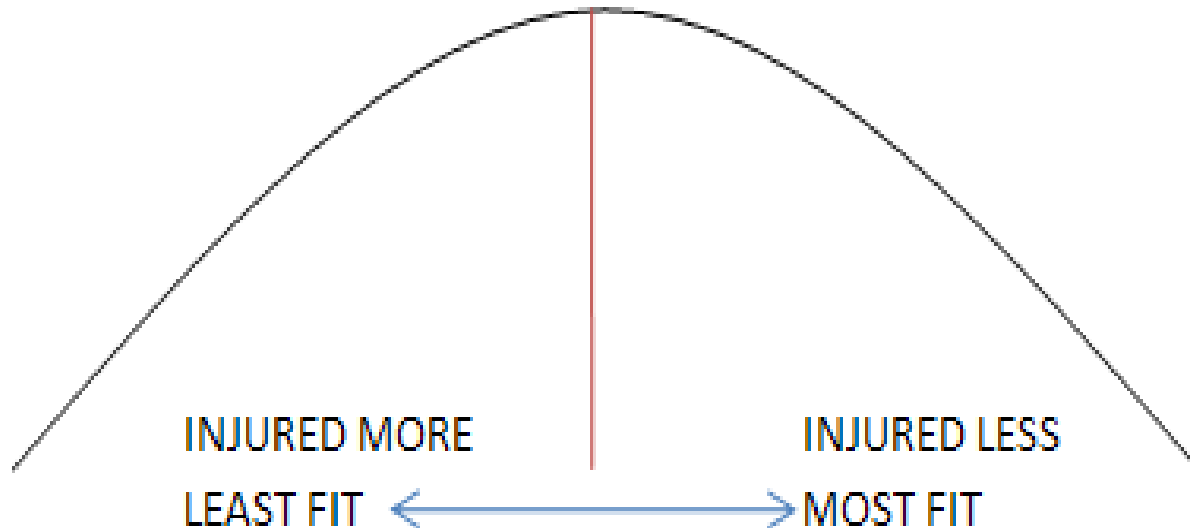
How can you explain the fact that some people run every day and they don't get injured?

Some Soldiers have built up their fitness to be able to run everyday. However exercising a group should never be built around the abilities of an extremely fit individual.



# AVERAGE AND LESS FIT SOLDIERS WILL GET INJURED TRYING TO FOLLOW THE ROUTINE OF THE MOST FIT.

- Most fit make it to the top
- Others have to push to make it
- Some less fit might not make it
- Some less fit get injured





***Push everyone at the level of those most fit.***



***Structure a program that challenges everyone.***

### ***Use ability groups:***

- So all can run at intensity level that benefits each
- Test group by one mile run then divide them into four groups
- Each group does training runs by time

### ***Choose ability groups:***

- When ready to move up
- When has difficulty maintaining (move down)
- When detraining occurs (drop back and progress gradually to previous fitness level)

# WHAT DOES THE EVIDENCE SAY AGAIN?

- Injury risk increased when a Service member runs more than 3 times a week for durations longer than 30 minutes.
  - › Very general guideline, will vary
- Increased fitness reduces injury risk. But at a certain point smaller increases in fitness are accompanied by a large disproportionate increase in injury risk.
- Endurance is just one aspect to fitness, don't neglect speed, power, strength and agility.

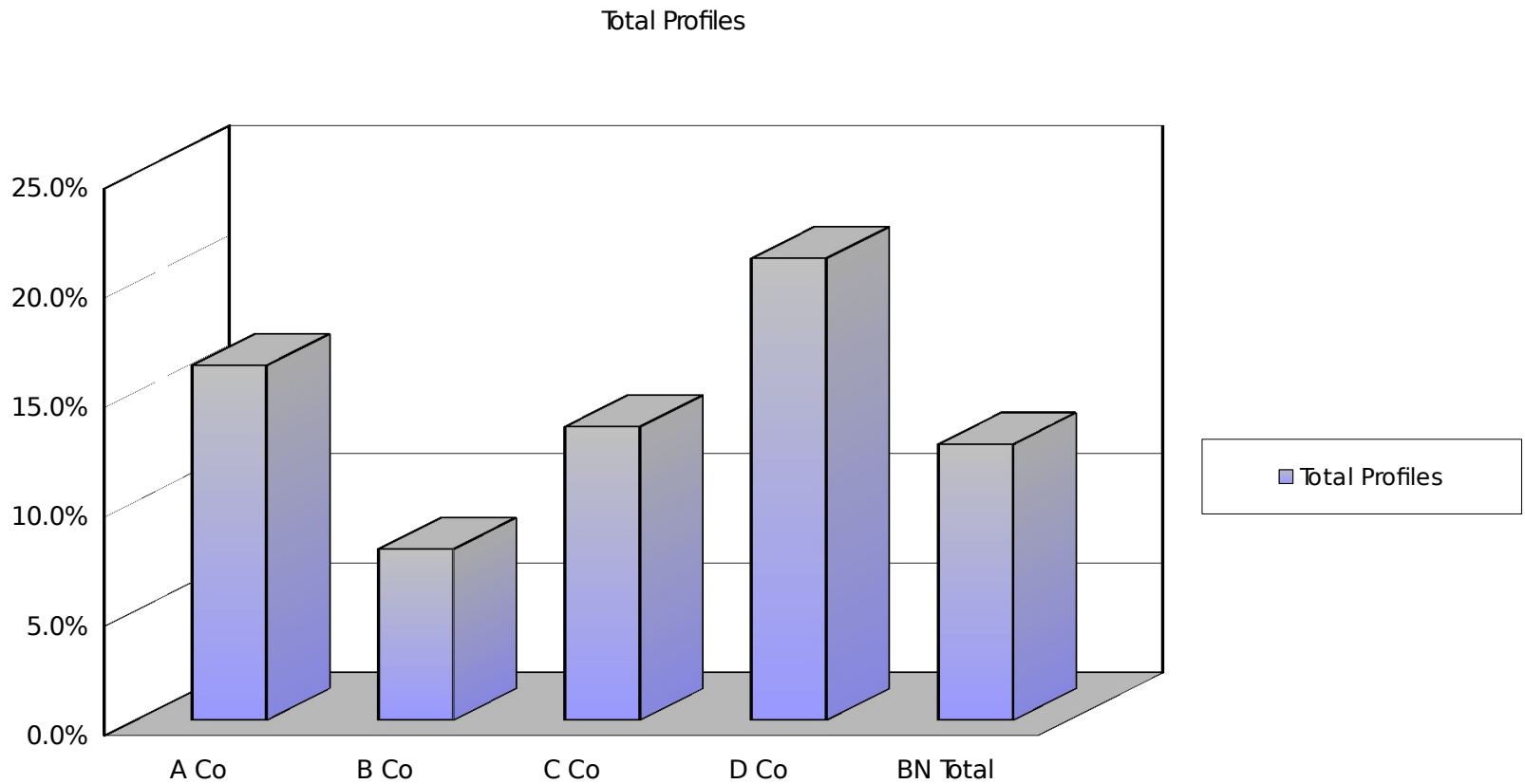
# SURVEILLANCE-IS THERE A PROBLEM?

- Surveillance's role is to reduce profiles and increase physical readiness.
- Surveillance reveals the size of the problem and will also give insights into solutions.
- A weekly or monthly report could be generated, **preventable** problems identified.
  - Once in place strategies can then be tested for effectiveness.

# INJURY SURVEILLANCE- COLLECT THE DATA

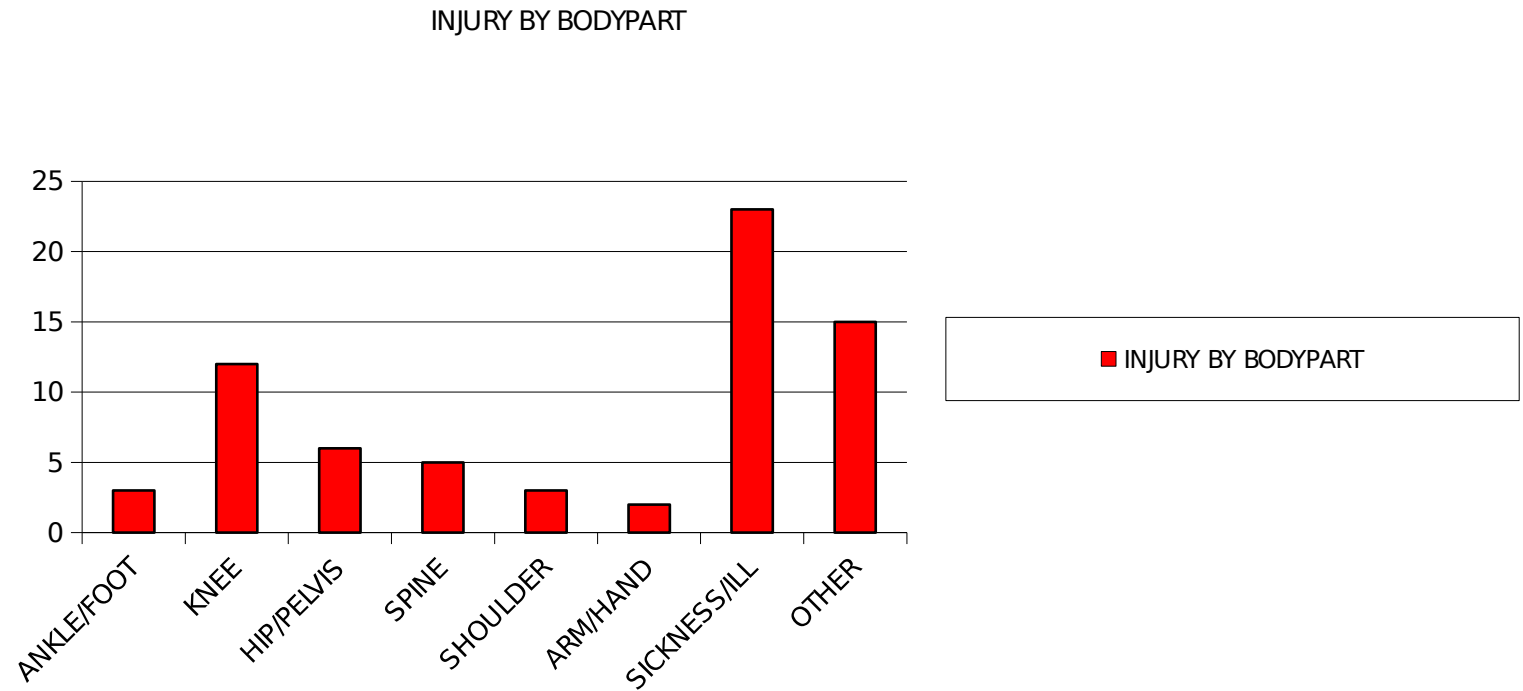
- Surveillance can be as easy as tracking profile metrics:
  - › Length of profile
  - › Body area affected
    - ▢ Back, knee, ankle, hip, etc
  - › What caused the injury
    - ▢ Situps, pushups, running, basketball, fall, etc
- Knowing just these three categories a commander can begin tracking and trending unit injury data and discover preventable problems.

# INJURY SURVEILLANCE- ANALYSIS

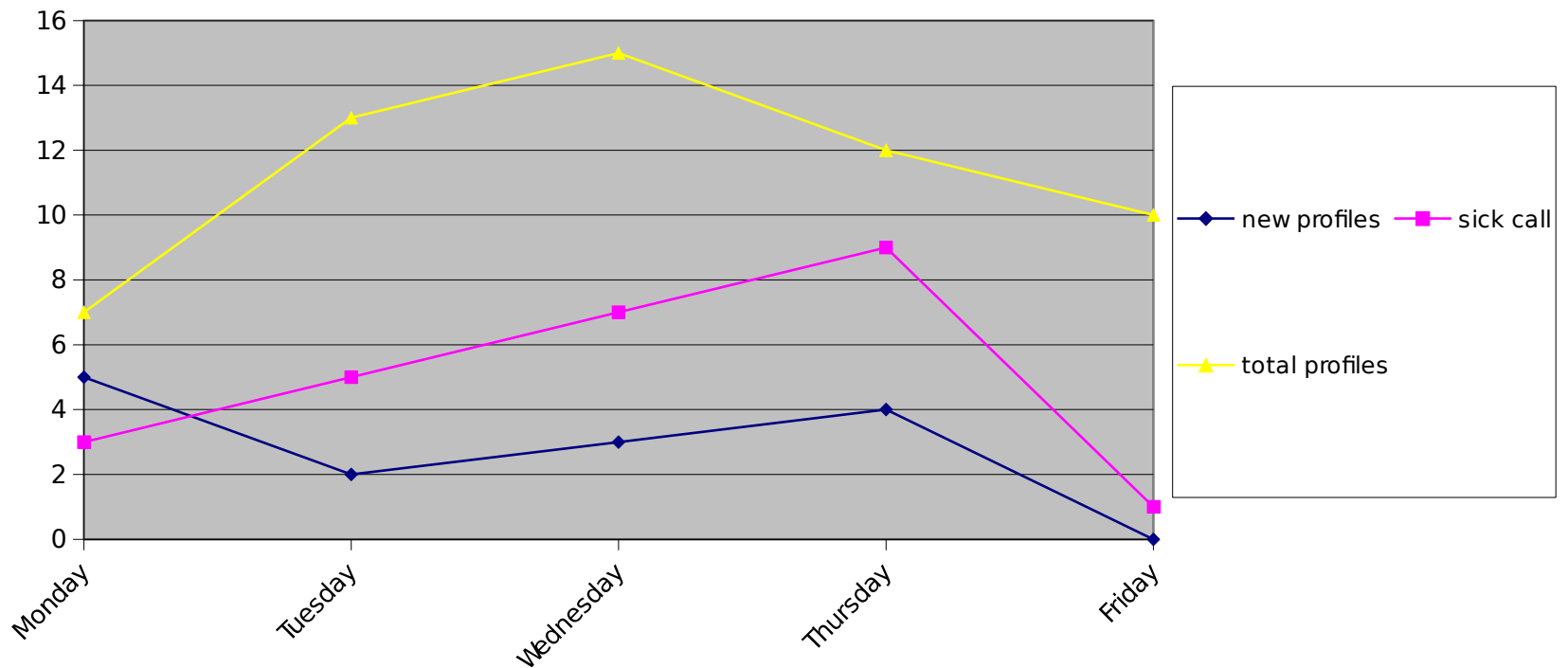




# INJURY SURVEILLANCE- ANALYSIS



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# SAMPLE SURVEILLANCE INFORMATION

Jun 5-9	PROFILE LENGTH (DAYS)	INJURY AREA	WHAT CAUSED THE INJURY
Monday	12	KNEE	HORSEPLAY
	13	BACK	FALLING FROM MILITARY VEHICLE
	30	ANKLE	BASKETBALL
	5	SHOULDER	COMBATIVES

# SURVEILLANCE

- The whole idea of surveillance is for commanders to understand the physical readiness of their unit. Injuries can't be prevented if you don't know what's causing them.
- No different than a football coach knowing who's on the injured reserve and why. Come game day the coach needs to know who can play and who can't.

# SUMMARY

- Injury is the leading health and readiness threat to the Army and sister Services.
- We have scientific evidence to recommend proven injury prevention strategies.
- Reducing endurance running frequency and duration reduces overtraining and overuse related injuries.
- Surveillance is needed at the unit level to identify preventable injuries.